

Translation

PATENT COOPERATION TREATY

PCT/EP2003/012791



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 41 304. go.sev	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/012791	International filing date (day/month/year) 15 November 2003 (15.11.2003)	Priority date (day/month/year) 30 November 2002 (30.11.2002)
International Patent Classification (IPC) or national classification and IPC C23C 2/24, 2/00, 2/40		
Applicant SMS DEMAG AKTIENGESELLSCHAFT		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>6</u> sheets, including this cover sheet. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of _____ sheets.
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 08 June 2004 (08.06.2004)	Date of completion of this report 09 December 2004 (09.12.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/012791

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-12, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages 1-11, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the drawings:
 pages 1/1, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/12791

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-11	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-11	NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

2. Citations and explanations**1. Reference is made to the following documents:**

D1: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 06,
30 April 1998 (1998-04-30) -& JP 10 046310 A
(NISSHIN STEEL CO LTD), 17 February 1998
(1998-02-17)

D2: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 09,
31 July 1998 (1998-07-31) -& JP 10 110251 A
(SHINKO ELECTRIC CO LTD), 28 April 1998
(1998-04-28)

D3: WO 02/14572 A (POHANG IRON AND STEEL COMPANY;
PARK JEONG REAL (KR); KARLSSON SVEN (S)
21 February 2002 (2002-02-21)

D4: PATENT ABSTRACTS OF JAPAN vol. 0184, no. 48
(C-1240), 22 August 1994 (1994-08-22) &
JP 6 136502 A (NISSHIN STEEL CO LTD), 17 May
1994 (1994-05-17)

D5: PATENT ABSTRACTS OF JAPAN vol. 0183, no. 92
(C-1228), 22 July 1994 (1994-07-22) &
JP 6 108220 A (NISSHIN STEEL CO LTD), 19 April
1994 (1994-04-19)

1.1 D1, acknowledged in the present application as prior
art, discloses a device for the hot dip coating of a

steel strip (1), which is guided through an upstream guide channel vertically into a bath of molten metal. The molten metal (4) is retained electromagnetically with two inductors (10a, 10b) disposed in the region of the guide channel. A sensor (13) for detecting the position of the strip is attached underneath the inductors.

1.2 The device defined in claim 1 of the present application differs from this prior art in that the sensor consists of two coils which, viewed in the conveying direction of the metal strand, are disposed within the vertical span of the inductors between the inductors and the metal strand. In the corresponding method defined in claim 11, voltages are induced in the two coils, the difference between which is used to derive an indicator for the position of the metal strand.

1.3 This solution is, however, suggested in D2. D2 discloses different embodiments of an electromagnetic sensor (4) for measuring the distance to a steel sheet (1) in electromagnetic guide channels in hot dip coating devices. Figure 4 shows the optimal embodiment with two inductors (3a, 3b) arranged facing the steel sheet and, in each case, two electromagnetic sensors (4c, 4d), the sensors being arranged between the inductors and the steel sheet within the vertical span of the inductors symmetrically to the centre plane of the guide channel. The output signals of the sensors are transferred to a measurement and control device (5c), and the signal can undergo proportional, integral or differential analysis. The measurement and control device (5c) controls the field strength

of the inductors (3a, 3b) accordingly, so that the sheet deflection in the guide channel is minimised (cf. D2, paragraph [0027]).

1.4 The subjects of claims 1, 2, 7, 9 and 11 do not therefore appear to be inventive. The other claims 3 to 6, 8 and 10 relate to preferred embodiments of the coils and of the measurement device which are known per se and/or are to be deemed routine technical approaches, and are thus not regarded as inventive.

1.5 The gist of the applicant's view according to the letter of 23 November 2004 is as follows:

A person skilled in the art would not consider D2 as generic prior art since, in said document, the metal strand was not guided through an electromagnetically sealed guide channel that was open at the bottom. There was therefore nothing in D2 to suggest ways and means of facilitating more precise control of the metal strand in the guide channel. Furthermore, D2 used electromagnetic sensors which were negatively affected by the strong magnetic fields of the inductors in D1. Consequently, even if a person skilled in the art were to consult D2, he would not position the sensors in the region of the vertical span of the inductors. Only the claimed configuration of the sensor as a coil in the specific arrangement defined in claim 1 of the application enabled the sensor to be arranged for position detection in the vertical span of the inductors despite their strong electromagnetic fields.

- 1.6 The following observations are made on the applicant's view:

The technical problem of detecting the position of the metal strand is not restricted to devices in which said strand is guided through an electromagnetically sealed guide channel that is open at the bottom. A person skilled in the art would therefore naturally consult any prior art concerned with this problem.

A "coil" is an electromagnetically acting and controllable physical entity. There is no discernible difference between any "coils" encompassed by claim 1 of the application and the electromagnetic sensors in D2. Preferred embodiments as emphasised in the applicant's letter do not have a limiting effect on the independent claim, the subject matter of which has to be interpreted as broadly as possible. Consequently, it must be assumed that, unless the "coils" are defined in detail, the claim also includes those which are subject to disturbance by the inductor fields. The problem is not therefore solved by claim 1 in the broadest possible interpretation of its scope. Consequently, no inventive step can be acknowledged even if the D2 teaching is not applied to D1.

2. Claims 1 to 11 do not therefore satisfy the requirements of PCT Article 33(3).
3. The other citations do not represent prior art closer to the present claims than D1 and D2 and do not therefore need to be discussed in detail.